



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,837	09/30/2003	George L. Eldridge	118719	4474
25944	7590	12/11/2007		
OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			EXAMINER ROBINSON, MYLES D	
			ART UNIT 2625	PAPER NUMBER
			MAIL DATE 12/11/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/674,837

Applicant(s)

ELDRIDGE ET AL.

Examiner

Myles D. Robinson

Art Unit

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3 - 8, 11 - 13 and 15 - 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3 - 8, 11 - 13 and 15 - 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment was received on 9/14/2007, and has been entered and made of record. Currently, **claims 1, 3 – 8, 11 – 13 and 15 – 20** are pending.

Response to Arguments

2. Applicant's arguments (*see Remarks 9/14/2007 [pages 7 - 8]*) with respect to **claims 1 – 7 and 13 – 20** have been fully considered and are persuasive. The objections and rejections under §101 and §112, first paragraph of these claims have been withdrawn.

3. However, the Applicant's arguments with respect to the §102 and §103 rejections of **claims 1, 3 – 8, 11 – 13 and 15 – 20** have been considered but are moot in view of the new ground(s) of rejection.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the printed result using the first set of image pixels, which is also analogous to the output image (as recited in **claims 1, 8 and 13**), how the final print composed of the second set of image pixels is visually substantially equivalent to the initial image composed of the first set of image pixels (as recited in **claim 1**), the processing of saturated pixels with different printing

hints from the original printing hints in a manner which is indistinguishable to the human eye (as recited in **claim 8**) and how the contone rendering module judges the saturated text pixels from those saturated pixels of non-text pixels [e.g. picture data, graphic data, etc.] such that the contone rendering module may be capable of adjusting the printing hints of the detected saturated text pixels (as recited in **claims 6 and 18**) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

The applicant argues that 1) the specification and drawings need only describe to how the method is accomplished and need not disclose the end result of the method in the drawings; and that 2) the results printed from the printer need not be disclosed if the claimed method used to compress the data sent to that printer is fully disclosed (see *Remarks 9/14/2007 [section I of page 6]*).

In response to these arguments, the examiner previously emphasized that in order for the claimed invention to be directed to statutory subject matter in accordance with 35 U.S.C. 101 that the claimed invention be directed toward a practical application which either 1) transforms an article or physical object to a different state or thing; or 2) otherwise produces a useful, concrete and tangible result. Either this transformation or this useful, concrete and tangible result is what provides the necessary utility to the end result of the method claims. See MPEP 2106 IV (C)(2).

Therefore, the utility of the statutory subject matter must be present within the claims and the drawings must show every feature of the invention specified in the claims. The alleged and apparent useful, concrete and tangible result of the claims is that the adjusted printing hints require less memory space **while at the same time**

preserving the integrity of the image by ensuring that the final image is visually substantially equivalent to the initial image such that there is no distinguishable difference between the final and initial images to the naked eye. Otherwise, the adjusted printing hints could be effectively compressed yet while sacrificing the image's integrity (e.g. lossy compression). Conversely, the adjusted printing hints could maintain the exceptionally high quality of images, but the tradeoff is the requirement of an enormous memory storage which costs more money and/or is less space-efficient (e.g. lossless compression).

Furthermore, Figure 1 appears to disclose how the adjusted printing hints require less space because the end prints (shown as reference characters 36 and 40) are more compressed than the original printing hints (shown as reference character 32). However, Figure 1 does not clearly disclose to one of ordinary skill in the art how is that the adjusted printing hints (shown as reference characters 28) are responsible for producing an end print (shown as reference characters 36 and 40) which is visually substantially equivalent to the initial image (shown as reference character 32) comprising the original printing hints of the prior art (shown as reference characters 26, 28, 30) such that there is no distinguishable difference between the final and initial images to the naked eye. Figure 1 along with the specification clearly distinguish that there are different types of printing hints as seen in reference characters 26, 28 and 30 because the prior art (shown as reference character 32) teaches each different type of printing hint is respectively assigned to its respective type of pixel (i.e. zero pixels, edge pixels, saturated pixels). However, the drawings do not clearly disclose how these

admittedly different printing hints assigned to their respective pixel types can be interchanged while simultaneously achieving an image of extremely high visual quality. See MPEP 608.02 I, IV.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The amendments to the specification were received on 9/14/2007. These amendments are acceptable.

6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. ***Claims 1, 3 – 8, 11 – 13 and 15 – 20*** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "the output image" in line 7. There is insufficient antecedent basis for this limitation in the claim. All claims dependent upon this claim suffer the same deficiency and, therefore, are rejected as well.

9. The term "adjacent to... edge pixels" in **claims 1, 3, 13 and 15** is a relative term which renders the claim indefinite. The term "adjacent to ... edge pixels" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification. When a term of degree is presented in a claim, first a determination is made as to whether the

specification provides some standard for measuring the degree. See MPEP 2173.05(b).

The examiner cannot find a reasonable standard of the term "adjacent to... edge pixels" within the specification (see *Specification [page 7, line 24 – page 8, line 3]*) in comparison to the drawings wherein all of the printing hints of saturated pixels were adjusted, including those printing hints of saturated pixels not adjacent to edge pixels (see *scanline of improved printing hints 34 in comparison to the scanline of pixels 10 wherein the pixels sandwiched in between saturated pixels adjacent to edge pixels, specifically the second through the second to last saturated pixels, are also converted*), as recited in **claims 1 and 13**.

Furthermore, the examiner cannot find a reasonable standard of the term "adjacent to... edge pixels" within the specification in comparison to the drawings wherein all of the printing hints of zero pixels were adjusted, including those printing hints of zero pixels not adjacent to edge pixels (see *scanline of optimized printing hints 38 in comparison to the scanline of pixels 10 wherein the outermost zero pixel on the right which is not adjacent to an edge pixel is also converted*), as recited in **claims 3 and 15**.

If a standard for measuring that degree cannot be determined based upon the specification, a determination is then made as to whether one of ordinary Skill in the art, in view of the prior art and the status of the art, would be nevertheless reasonably apprised of the scope of the invention. Even if the specification uses the same term of

degree as in the claim, a rejection may be proper if the scope of the term is not understood when read in light of the specification. See MPEP 2173.05(b).

One of ordinary skill in the art in view of the prior art would interpret "adjacent" to mean 1) immediately adjoining without intervening space; 2) sharing a common boundary or edge; 3) contiguous; or, 4) connecting without a break; 5) placed so near as to touch or have contact with. These definitions of "adjacent" do not apply to the outermost pixel on the right shown in scanline 38 and do not apply to the sandwiched saturated pixels in between the first and last saturated pixels shown in scanline 34.

When relative terms are used in claims wherein the improvement over the prior art rests entirely upon size or weight of an element in a combination of elements, the adequacy of the disclosure of a standard is of greater criticality. See MPEP 2173.05(b).

In the instance, the relative adjacency of both saturated and zero pixels to abutting edge pixels carries significant weight in the improvement over the prior art such that the relative adjacency of saturated and zero pixels to abutting edge pixels determines whether their printing hints will be changed to those of edge pixels or not.

Therefore, the relative term "adjacent to... edge pixels" renders these claims indefinite. All claims dependent upon these claims suffer the same deficiency and, therefore, are rejected as well.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. **Claims 1, 4 – 8, 11 – 13 and 16 – 20** are rejected under 35 U.S.C. 102(b) as being anticipated by **Toyokawa** (U.S. Patent No. 4,673,987).

Referring to **claim 13**, Toyokawa discloses a printer (*column 1, lines 15 – 19*) comprising:

a contone rendering module (*see Fig. 1, uniform tone detector 36 detects uniform continuous gray tones within subject 22 [column 1, lines 20 – 32]*) for generating a first set of image pixels (*see Fig. 1 wherein scanner 24 provides an analog representation of each pel [pixel] of subject 22 to be converted by A/D converter 28 and stored in buffer store 30*) having corresponding printing hints for processing saturated pixels thereby producing different printing hint values (*see Fig. 1 wherein block encoder 32 in conjunction with uniform tone detector 36 outputs a dither code word [i.e. a printing hint value] identifying the logic stages of all the pixels of subject 22 such that each the dither code word designates a predetermined array of black pixels [i.e. saturated pixels] and white pixels [i.e. zero pixels] [column 2, line 43 - column 3, line 2]*), and

an image output terminal (*see Fig. 1, transmission encoder 38*) for receiving the different printing hint values to produce a second set of image pixels (*see Fig. 1 wherein computer 44 analyzes the received array of matrices having common gray tones and then attaches a new suffix [i.e. a different printing hint than the original printing hint] to the dither code word to indicate the extent of the repetition of a particular matrix*) processed to result in a final image visually substantially equivalent to a first image

using the first set of image pixels (column 3, lines 3 – 21 wherein the appendage of the new suffix helps to compress the succession of code words to a substantially shorter message which fully describes the image and column 6, lines 29 – 32 wherein the final outputted image of display 26 appears the same as the original inputted subject matter 22),

wherein the contone rendering module produces different printing hint values (column 2, line 58 – column 3, line 2 wherein block encoder 32 outputs a dither code word [i.e. printing hint value] identifying the logic states of all of the pixels), wherein fully saturated pixels (see column 3, lines 58 – 63 and Table 1 wherein standard block S(16) represents a dither matrix of black pixels such that it is analogous to an original printing hint for a matrix of exclusively fully saturated pixels) that are adjacent to pixels with printing hints indicating they are edge pixels (see column 3, lines 58 – 63 and Table 1 wherein standard blocks S(1) – S(15) represent a dither matrix of black and white pixels [e.g. gray tones] such that these are analogous to an original printing hint for a matrix of edge pixels) will have their printing hints changed to indicate they are edge pixels (see Table 1 wherein the computer 44 attaches the code suffix '10' to both standard blocks S(1) – S(15) of edge pixels and standard block S(16) of saturated pixels [column 1, line 62 – column 2, line 4 and column 3, line 64 – column 4, line 7]), and

the different printing hint values requiring less memory space than the first printing hints (Abstract, column 1, lines 33 – 42, column 1, line 62 – column 2, line 4, column 3, column 3, lines 8, column 4, lines 40 – 48 and column 6, lines 33 – 46).

Referring to **claim 16**, Toyokawa discloses the printer further wherein the contone rendering module losslessly compresses the different printing hint values (*column 1, lines 62 – 67, column 4, lines 40 – 49 and column 6, lines 29 – 32 wherein the run-length compression aids in the loseless compression of the image data such that the final outputted image of display 26 appears the same as the original inputted subject matter 22*).

Referring to **claim 17**, Toyokawa discloses the printer further wherein the contone rendering module produces use run length compression to compress the adjusted printing hint values (*see Fig. 1, run length counter 46 [Abstract, column 3, lines 3 – 21 and column 4, lines 44 – 49]*).

Referring to **claim 18**, Toyokawa discloses the printer further wherein the contone rendering module adjusts printing hint values for a saturated pixel from a text pixel to edge pixel when there is no significant change in the end printed result (*see column 3, lines 50 – 57 and column 6, liens 33 – 41*).

Referring to **claim 19**, Toyokawa discloses the printer further wherein the contone rendering module reduces entropy in the printing hints by greater than forty percent (*see column 6, lines 37 – 41 wherein:*

$$1 - \frac{1}{\text{Data Compression Rate}} = \text{Data Rate Savings (percentage)}$$

Therefore, the compression rates being 2.88 and 2.76 yield date rate savings of 65.2% and 63.7%, respectively, over the 40% of the prior art).

Referring to **claim 20**, Toyokawa discloses the printer further wherein the contone rendering module uses more than one compression algorithm (see column 4, line 32 – column 5, line 16 and Tables 1 – 2 wherein computer 44 in conjunction with run length counter 46 and memory 48 can utilize a 1-D compression algorithm as well as a 2-D compression algorithm).

Referring to **claims 1 and 3 – 7**, the rationale provided in the rejections of claims 13 and 15 – 19, respectively, are incorporated herein. In addition, the apparatuses of claims 13 and 15 – 19 perform the methods of claims 1 and 3 – 7, respectively.

Referring to **claims 8, 11 and 12**, the rationale provided in the rejections of claims 1, 5 and 4, respectively, are incorporated herein. In addition, the methods of claims 1, 5 and 4 include the elements and limitations of the methods of claims 8, 11 and 12, respectively. Furthermore, as discussed above in the rejections of claims 1, 6 and 13, Toyokawa discloses processing at least one of a saturated pixel from a text pixel to an edge pixel with no significant change in the output image.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ohtani (U.S. Patent No. 4,918,540) discloses a system for encoding or decoding analog video signals into digital video signals wherein a comparison of the converted digital signals leads to a selection of the one signal before or after preprocessing which appears to be the best and that selected signal has a tag inserted to demark it from the

next succeeding signal and to indicate whether the preprocessing was or was not included in the transmitted signal (*see Abstract*).

Judice (U.S. Patent No. 3,967,052) discloses an image transmission method wherein the bandwidth and/or time required to transmit the image to a remote display medium is substantially reduced by assembling in respective groups dithered image bits which correspond to picture elements having substantially equal assigned dither threshold values wherein the resultant bit stream is then encoded for transmission via standard run-length encoding techniques (*see Abstract and Figs. 1 – 3*).

Pollich et al. (U.S. Patent No. 5,243,446) disclose an adaptive clumped dithering with clump plane separation wherein an irregularly shaped matrix of thresholds is employed in an adaptive approach to convert each multilevel gray scale pixel to a bilevel (black/white) pixel such that the compression performance is Enhanced by an image rearrangement process in which pixels thresholded with similar threshold values are grouped together prior to run length encoding (*see Abstract and Figs. 1 – 3*).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Myles D. Robinson whose telephone number is (571) 272-5944. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler L. Haskins can be reached on (571) 272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/674,837
Art Unit: 2625


Page 14

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



MDR

12/4/07



TWYLER LAMB HASKINS
SUPERVISORY PATENT EXAMINER